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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/224,637	12/31/1998	YUVAL OFEK	E0295/7080	3449

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EXAMINER

VITAL, PIERRE M

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 08/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/224,637

Applicant(s)

OFEK ET AL.

Examiner

Pierre M. Vital

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-10 is/are allowed.
- 6) ☒ Claim(s) 11, 12 and 14-28 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed June 18, 2004 in response to PTO Office Action mailed March 15, 2004. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
2. Claims 1-28 have been presented for examination in this application. In response to the last Office Action, claims 1 and 11 have been amended. No claims have been canceled or added. As a result, claims 1-28 are now pending in this application.

Response to Arguments

3. Applicant's arguments filed June 18 2004 with respect to claim 19 have been fully considered but they are not persuasive. As to the remarks, applicant asserted that:

Chin does not disclose a method comprising a step of transferring data from at least one of a plurality of primary storage elements to a secondary storage element.

Examiner respectfully traverses applicant's arguments for the following reasons. Examiner would like to point out that Chin discloses that disk drives 32 and 34 mirror data from hard disk drives 12 and 14 under the control of Transaction Server 16 (see Fig. 1; column 6, lines 1-10). Chin further discloses that HSM server writes data to the backup disk drives 32 and 34 and later archives the data to the secondary backup devices 38 and 40 (see Fig. 1; column 8, lines 1-5). It is to be noted that disk drives 32 and 34 are backup disk drives, part of the Secondary Loop 26. As such, disk drives 32

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and 34 constitute secondary storage elements. Thus, it can be clearly seen that Chin discloses transferring data from at least one of a plurality of primary storage elements to a secondary storage element as claimed by applicant.

4. Applicant's arguments, see pages 7-11, filed June 18, 2004, with respect to claims 1-18 have been fully considered and are persuasive. The rejection of claims 1-18 has been withdrawn.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 19, 20, 23-24 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Chin et al (US6,000,020).

As per claim 19, Chin discloses a method for transferring data from at least one of a plurality of primary storage elements to a secondary storage element, the plurality of primary storage elements comprising a primary storage element that serves as primary non-backup storage for a host computer that is separate from and coupled to the primary storage element, the method comprising the steps of:

automatically establishing a first connection through a network between a first primary storage element and the secondary storage element through which a first logical object can be transferred from the first primary storage element to the secondary storage element [col.7, line 40 – col. 8, line 15], the first connection being determined by at least one of the first primary storage element and the secondary storage element [col. 7, lines 59-67]; and transferring the first logical object from the first primary storage element directly to the secondary storage element over the first connection [col. 7, lines 62-67].

As per claim 20, Chin discloses automatically establishing a second connection through a network between a first primary storage element and the secondary storage element through which a first logical object can be transferred from the first primary storage element to the secondary storage element [col. 8, lines 1-15]; and transferring a second logical object from one of the primary storage devices directly to the second storage device directly over a second connection [col. 8, lines 16-30].

As per claim 23, Chin discloses the step of automatically establishing comprises a step of establishing a path through a network [col. 7, lines 62-67].

As per claim 24, Chin discloses the use of a tape library unit [*tape 40*; Fig. 1], which is well known in the state of the art.

As per claim 28, Chin discloses transferring data from the first one of the storage elements to the secondary storage element without involving the host computer [*data is mirrored transaction server 16 can address OPN primitives directly to the mirrored drives*; col. 7, lines 56-59].

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 11, 12, 14-18 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al (US6,035,412) and Misinai et al. (US5,848,241) and Cotugno (US6,085,266).

As per claim 11, Tamer discloses a plurality of host computers [*host processors 8(a)..8(n)*; Fig. 2; col. 6, lines 37-40]; a plurality of primary storage devices to receive and store data in the devices; each primary storage device being associated with at least one of the host computers [*host accesses the source volumes for read/write operations*; Fig. 1; col. 4, line 65- col. 5, line 12]; a secondary storage device to receive and store data in the device coupled to a plurality of the primary storage devices [*slave unit 4, tape silo 12*; Fig. 1], the secondary storage device being configured to receive backup data from each of the host computers [*slave unit 4, tape silo 12*; Fig. 1]; a single backup controller capable of backing up data stored from both the first and second host computers on the plurality of primary storage devices to the secondary storage device [*backup console 16 controls and coordinate backup*; col. 4, lines 49-53].

However, Tamer fails to specifically teach that the plurality of host computers is heterogeneous as recited in the claim.

Misinai discloses a plurality of heterogeneous host computers that facilitates the sharing of relevant data items between and among the computer systems and between the computer systems and controllers of the storage devices in an efficient way (col. 2, lines 29-35). Since the technology for implementing heterogeneous computers in a system was well known, and since the use heterogeneous computers facilitates the sharing of relevant data items between and among the computer systems and between the computer systems and controllers of the storage devices in an efficient way, an artisan would have been motivated to implement host computers as heterogeneous computers in the system of Tamer. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the system of Tamer to include a heterogeneous plurality of host computers because they were well known to facilitates the sharing of relevant data items between and among the computer systems and between the computer systems and controllers of the storage devices in an efficient way as taught by Misinai.

However, the combination of Tamer and Misinai does not specifically teach data stored from the first host computer has a first format established by a first platform and the data stored from the second host computer has a second format established by the second platform as recited in the claim.

Cotugno discloses computers having different data formats on different platforms to provide for system integration in different networks (col. 1, lines 20-58). Since the technology for implementing computers having different data formats on different platforms was well known as evidenced by Cotugno, and since computers having

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different data formats on different platforms provide for system integration in different networks, an artisan would have been motivated to implement computers having different data formats on different platforms in the system of Tamer and Misinai. Thus, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Tamer and Misinai to include computers having different data formats on different platforms because it was well known to provide for system integration in different networks as taught by Cotugno.

As per claim 12, Tamer discloses at least one of the primary storage devices is a cached disk array [col. 6, lines 59-65].

As per claim 14, Tamer discloses a secondary storage device including a plurality of ports coupled to the network to send and receive data on the network in parallel [*writes in R1 volumes are automatically copied to R2 volumes*; col.5, lines 6-19; col. 6, lines 17-65].

As per claim 15, the combination of Tamer and Misinai fails to teach a secondary storage device comprising data movers as recited in the claims. Official Notice is taken that both the concept and the advantages of providing for storage devices, which include data movers, are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art to have included the data movers in the combination of Tamer and Misinai as these data movers are known to provide a means for communication between the backup devices and the network.

As per claim 16, Tamer discloses transferring a first logical object from one of the primary storage devices directly to the second storage device directly over a first connection [*master storage unit 2 is directly coupled to slave unit 4 by communication link 6; Fig. 1A*].

As per claim 17, Tamer discloses transferring a second logical object from one of the primary storage devices directly to the second storage device directly over a second connection [*master storage unit 2 is directly coupled to slave unit 4 by communication link 6; Fig. 1A*].

As per claim 18, Tamer discloses the use of a tape library unit [*tape silo 12; Fig. 1*], which is well known in the state of the art.

As per claim 27, Tamer discloses the secondary storage device is configured to receive the back up data from at least one of the primary storage devices without involving one or more of the host computers [*data is mirrored in a manner that is transparent to the host; col. 7, lines 15-19*].

9. Claims 21 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al (US6,000,020) and Beardsley et al. (US5,680,580).

As per claim 21, Chin discloses the claimed invention as detailed above in the previous paragraphs. However, Chin fails to specifically teach that a secondary storage device including a plurality of ports coupled to the network to send and receive data on the network in parallel as recited in the claims.

Beardsley discloses a secondary storage device including a plurality of ports coupled to the network to send and receive data in parallel [col. 4, lines 63-66; col. 14, lines 20-21] to improve system throughput by initiating multiple request connects

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concurrently (see abstract). Since the technology for implementing a secondary storage device including a plurality of ports was well known, and since a secondary storage device including a plurality of ports improve system throughput by initiating multiple request connects concurrently, an artisan would have been motivated to implement improve system throughput by initiating multiple request connects concurrently in the system of Chin. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the system of Chin to include a secondary storage device including a plurality of ports because a secondary storage device including a plurality of ports was well known to improve system throughput by initiating multiple request connects concurrently as taught by Beardsley.

As per claim 25, the combination of Chin and Beardsley fails to teach a secondary storage device comprising data movers as recited in the claims. Official Notice is taken that both the concept and the advantages of providing for storage devices, which include data movers, are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art to have included the data movers in the combination of Chin and Beardsley as these data movers are known to provide a means for communication between the backup devices and the network.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al (US6,000,020) and Misinai et al. (US5,848,241).

As per claim 22, Chin discloses the claimed invention as detailed above in the previous paragraphs. However, Chin fails to specifically teach that the plurality of host computers are heterogeneous and that they comprise a first host computer comprising a first platform and a second host computer comprising a second platform different from the first platform as recited in the claim.

Misinai discloses a plurality of host computers are heterogeneous and that they comprise a first host computer comprising a first platform and a second host computer comprising a second platform different from the first platform that facilitates the sharing of relevant data items between and among the computer systems and between the computer systems and controllers of the storage devices in an efficient way (col. 2, lines 29-35). Since the technology for implementing heterogeneous computers in a system was well known, and since the use heterogeneous computers facilitates the sharing of relevant data items between and among the computer systems and between the computer systems and controllers of the storage devices in an efficient way, an artisan would have been motivated to implement host computers as heterogeneous computers in the system of Chin. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify the system of Chin to include a heterogeneous plurality of host computers because they were well known to facilitate the sharing of relevant data items between and among the computer systems and

between the computer systems and controllers of the storage devices in an efficient way as taught by Misinai.

Allowable Subject Matter

11. Claims 1-10 are allowed over the prior art of record.
12. Claim 13 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
13. The following is a statement of reasons for the indication of allowable subject matter:
 - (a) As per claim 1, the prior art of record does not teach or suggest "a secondary storage device to provide backup storage for the host computer; and a network, separate from each of the one or more communication links that couple the storage domain to the host domain, that couples the plurality of primary storage devices to the secondary storage device to permit one of the primary storage devices to access the secondary storage device through the network without using any of the one or more communication links that couple the storage domain to the host domain so that

communication between the plurality of primary storage devices and the secondary storage device can occur over the network simultaneously with communication between the host domain and the storage domain through the one or more communication links” in combination with the other elements set forth in the claimed invention.

Therefore, dependent claims 2-10 are allowable as being dependent upon independent claim 1 and having additional allowable features therein.

(b) As per claim 13, the prior art of record does not teach or suggest “means for forming an abstract block set from a logical object stored in one of the primary storage devices” in combination with the other elements set forth in the claimed invention.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111 (c) to consider these references fully when responding to this action. The documents cited therein teach computers on different platforms having different data formats.

15. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

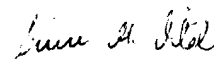
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (703) 306-5839. The examiner can normally be reached on Mon-Fri, 8:30 am - 6:00 pm, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 12, 2004



Pierre M. Vital
Examiner
Art Unit 2188